

SECTION 09960

HIGH PERFORMANCE COATINGS

PART 1 GENERAL

1.1 SUMMARY

A. Scope

1. Provide all material, labor and equipment to produce finished surfaces with high performance coatings as shown and scheduled on the DRAWINGS and as specified herein, to provide properly finished surfaces throughout. This SECTION, in conjunction with the color/finish schedules on the DRAWINGS or in the SPECIFICATIONS or issued separately, establishes the scope of the coating work, the surfaces to be coated, and the coating systems to be used.
 - a. Also coat existing surfaces where scheduled.
2. All interior painting and coatings to meet limits established by the Green Seal Standard GS-11 and as required to meet the minimum requirements of LEED NC 2.2.

B. Related Work Specified Under Other Sections

1. Painting – DIVISION 9.
2. Shop prime painting of steel surfaces - DIVISION 5.
3. Coating Color Selection: Finish Schedule.

1.2 DEFINITIONS

- ###### A. General: High performance coating includes epoxies, enamels, emulsions and other coatings whether used as prime, intermediate, or finish coats.

- ###### B. Terminology: ASTM D16.

- ###### C. Gloss: Range per National Paint and Coatings Association (NPCA).

1. Flat: Matte finish with a gloss range below 15 when measured at an 85 degree meter.
2. Eggshell: Low sheen finish with a gloss range between 5 and 20 when measured at a 60 degree meter.
3. Satin: Low sheen finish with a gloss range between 15 and 35 when measured at a 60 degree meter.
4. Semi-gloss: Medium sheen finish with a gloss range between 30 and 65 when measured at a 60 degree meter.
5. Full gloss: High sheen finish with a gloss range greater than 65 when measured at a 60 degree meter.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements
 - 1. Coating materials and application techniques shall comply with local air quality requirements.
- B. Sample Areas
 - 1. Coat sample areas not less than 30 square feet, in locations as directed by the OWNER'S REPRESENTATIVE, to establish standards of quality and workmanship to be expected of coating Work on the PROJECT. Sample coated areas will be inspected by the OWNER'S REPRESENTATIVE, and, if approved, will be used as a basis by which the acceptability of the completed painting on the PROJECT will be judged.
 - 2. Adhesion tests shall be required before proceeding with coating.
- C. Testing: Testing Laboratory Shall Have The Following Responsibilities
 - 1. CONTRACTOR shall hire testing laboratory to do testing.
 - 2. Analyze the existing painted surface to determine the type of paint (including primer) and number of existing paint layers that exist.
 - 3. Determine if contaminants or ill bonding paint layers are present.
 - 4. What type of contaminants are present and what proposed surface preparation is required.
 - 5. Perform a minimum of one adherence test in each area, minimum of one per 1000 s.f., or as required due to the existing conditions of the area to be coated.
 - 6. Testing Laboratory shall recommend proper cleaning methods, along with the scraping and sanding routine, to properly make the surfaces to be coated acceptable to the new coating material.
 - 7. After the cleaning process, recommend primer system for the existing surfaces.
 - 8. After surfaces are properly prepared and primed, recommend the type of coating system and material best suited for the existing conditions.
 - 9. The testing laboratory may do other testing to properly define the existing conditions and to analyze what the proper coating system should be.
 - 10. Where any contaminants, such as asbestos, lead, or other carcinogens, are found to be present, the laboratory shall notify the OWNER'S REPRESENTATIVE for proper disposal of the contaminant without delaying the construction process.

1.4 SUBMITTALS

- A. Furnish submittals for items that are identified in this SECTION by a different typeface and a bracketed code (e.g., *Item [L]*). Refer to SECTION 01340 for definition of codes for types of submittals and the administrative requirements governing submittal procedure. Additional submittal requirements pertaining to this SECTION are specified herein under this Article.
- B. *High Performance Coating Product Data [P]*: Provide product data for each coating system including fillers and primers.
 - 1. Provide a material list of all coatings and paints. Cross reference each specific coating, finishing system and application with each material and identify each material by catalog number of the manufacturer and general classification.

2. Provide manufacturer's application instructions and technical information regarding label analysis, storage and handling.
 3. The manufacturer shall certify that coating and paint materials comply with regulations for use of volatile organic compounds (VOC's).
- C. *Coating Color Samples [S]*: Submit color samples, showing coating system manufacturer's standard color range and sheens for each coating system specified. Sample shall be not less than 12 square inches in size.
- D. After receipt of color samples and before commencement of the WORK, the ARCHITECT-ENGINEER will furnish a color schedule, showing the location of the various colors. Refer to the article "COLORS", herein.
- E. Paint Fire Hazard Classification: Submit certificates stating that materials meet fire hazard classification as specified.
- F. Qualification data: Provide qualification data for firms and personnel specified in "Quality Assurance" indicating performance, experience and capability. Provide list of references and completed projects, including names and addresses of owners and clients.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery
1. Deliver specified products to site in unopened, sealed containers bearing manufacturer's name, brand name, type and color of coatings, and instructions for application, including the following:
 - a. Product name or title of material.
 - b. Product description.
 - c. Manufacturer's stock number and date of manufacture.
 - d. Contents by volume, for pigment and vehicle constituents.
 - e. Thinning instructions.
 - f. Color name and number.
 - g. VOC content.
- B. Storage
1. Store products in the space designated for the storage and mixing of coatings. Whenever it may be necessary to change the location of storage space, promptly move products to the newly designated space, without additional cost to the OWNER.
 2. Refer to the article "PROTECTION" in Part 3.
 3. Store paint materials in ventilated areas at a minimum temperature of 45 degF (7 degC). Keep containers tightly covered. Maintain containers and storage area in clean condition.
 4. Protect paint materials storage space from damage. Remove contaminated rags and waste from premises every day. Take all precautions to prevent fire, including spontaneous combustion.
 5. Unless a room or area in the building is designated by the Owner's Representative for storage of paint materials, provide a temporary outside storage shed for storage of paint materials.

6. If the Owner's Representative designates temporary storage space in the building, store materials so that they do not interfere with the Owner's operations or the work of others. Move materials when directed to do so by the Owner's Representative at no cost to the Owner. Protect existing surfaces from damage or defacement. On completion of painting operations, leave temporary storage spaces in building clean.
7. Comply with provisions specified under "Fire Protective Measures" of the "Construction General Conditions". Take every precaution to avoid spontaneous combustion. Keep cloths, cotton waste, oily rags, and similar fire hazardous, combustible materials in metal containers. Remove containers from the building every night.

1.6 PROJECT CONDITIONS

- A. Environmental Requirements
 1. Do not apply exterior coatings in damp or rainy weather, nor until surface has dried from the effects of such weather.
 2. Do not apply coatings when ambient and surface temperatures are less than 45 degF (7.2 degC) or greater than 95 degF (35 degC).
 3. Do not apply paint when the relative humidity is greater than 85% or when temperatures are less than 5 degF (3 degC) above the dew point.
 - a. Interior painting is allowed in damp and rainy weather when the interior areas are enclosed and heated and ventilated in accordance with the temperature and humidity requirements of manufacturer.
- B. Provide all scaffolds, drop cloths, ladders and other equipment required for the proper execution of the work.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are package with protective covering for storage and identified with labels describing contents.
 1. High-Performance Coatings: Full, unused containers equal to 5 percent of each material and color applied, but not less than 1 gal. (3.785 L) or 1 case, as appropriate.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 Articles.
- B. Manufacturer's Names: Shortened version(shown in parentheses) of the following manufacturer's names are used in other Part 2 Articles:
 1. Benjamin Moore & Co., (Moore).
 2. Carboline Company (Carboline).
 3. Dupont Company (Dupont).
 4. ICI Dulux, Inc. (ICI).

5. International Protective Coatings (International).
6. PPG Industries, Inc, (PPG).
7. Rust-Oleum Co. (R-O).
8. Sherwin-Williams Co. (S-W).
9. Tnemec (Tnemec).

2.2 MATERIALS, GENERAL

- A. Provide approved coating material for each coating type required for the Work.
- B. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- C. Material Quality: Provide manufacturer's best-quality coating material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Coating-material containers not displaying manufacturer's project identification will not be acceptable.
- D. Colors: [Match samples] [As indicated by manufacturer's designations] [As selected from manufacturer's full range]. [As indicated in Finish Schedule – SECTION 09999].

2.3 PREPARATORY COATS

- A. Block Filler: Acrylic or epoxy block filler of topcoat manufacturer.
- B. Primer: Acrylic or epoxy primer of topcoat manufacturer recommended in writing by manufacturer for use with intermediate and topcoats and substrate indicated under environment conditions indicated.
- C. Intermediate Coat: Epoxy intermediate coat of topcoat manufacturer recommended in writing for use with primer, and topcoat, and substrate indicated under environmental conditions indicated.

2.4 INTERIOR HIGH-PERFORMANCE TOPCOATS

- A. Moderate-Environment, Semigloss Epoxy:
 1. Products:
 - a. Carboline; Sanitile 250 WB Finish Waterborne Epoxy-Acrylic, unless otherwise indicated.
 - 1) Concrete and Masonry (Other Than Concrete Masonry Unit) Substrates: 888 2-Component Polyamide Epoxy.
 - b. DuPont; 25P High Solids Epoxy Mastic.
 - c. ICI; Tru-Glaze-WB 4406 Waterborne Epoxy Semigloss Coating, unless otherwise indicated.
 - 1) Concrete Masonry Unit Substrates: Devran 224 HS High Build Epoxy Enamel.
 - d. International; Intergard 475 Semi-Gloss Polyamide Epoxy Intermediate/Finish.

- e. PPG; 97-1XXX Series Aquapon High Build Semi-Gloss Polyamide Epoxy Coating.
- f. R-O; 9500 System High Build Polyamide Epoxy at 5.0- to 8.0-mil (0.127- to 0.203-mm) dry film thickness.
- g. S-W; Epolon II Multi-Mil Epoxy Series B62V800.
- h. Tnemec; Series 66 Hi-Build Epoxoline Polamidoamine Epoxy.

PART 3 EXECUTION

3.1 EXAMINATION AND ACCEPTANCE OF CONSTRUCTION IN PLACE

- A. Examine construction in place on which the work of this SECTION is dependent. Defects which may influence satisfactory completion and performance of the work of this SECTION shall be corrected per the requirements of the applicable SECTION of the SPECIFICATIONS prior to commencement of the work. Commencement will be construed as construction in place being acceptable for satisfying the requirements of this SECTION.
- B. Coordination of Work: Review other Sections in which primers or other coatings are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of specified finish materials to ensure compatible primers.
 - 1. If a potential incompatibility of primers applied by others exists, obtain the following from primer Applicator before proceeding:
 - a. Confirmation of primer's suitability for expected service conditions.
 - b. Confirmation of primer's ability to be topcoated with materials specified.
 - 2. Notify Owner's Representative about anticipated problems before using coatings specified over substrates primed by others.

3.2 PREPARATION OF SURFACES

- A. Preparation:
 - 1. Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
 - a. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.
- B. General
 - 1. Prepare surfaces to be painted as part of the WORK in accordance with instructions which follow.
 - 2. Cleaning: Before applying high-performance coatings, clean substrates of substances that could impair bond of coatings. Remove oil and grease before cleaning.
 - 3. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
 - 4. NOTE: The WORK may not require the use of all surface preparation instructions specified.
- C. Ferrous Metals
 - 1. Unprimed: Blast clean per SSPC-SP6 for Commercial Blast Cleaning.

2. Shop Primed: Remove grease, rust, scale and dust, and touch up, with metal primer, chipped and abraded places, weld scars, and other spots where the prime coat is damaged with same primer as shop coat..
3. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
4. Zinc-Coated: Wash with mineral spirits. Remove white deposit on weathered surfaces with soap and water, and rinse with clean water.

D. Masonry

1. Smooth surface by grinding, stoning or scraping. Clean free of efflorescence, dirt and dust, grease and oils.
2. Use abrasive blast-cleaning methods if recommended by the manufacturer.
3. Upon testing, if surfaces are sufficiently alkaline to cause paint to blister or burn, sponge surface with a zinc-sulphate solution consisting of 2 lbs. zinc-sulphate to one gallon of water. When solution is dry, brush off the crystals prior to coating.

E. Concrete

1. Smooth surfaces by grinding, stoning, or scraping. Clean free of efflorescence, dirt and dust, grease and oils.
2. Use abrasive blast-cleaning methods if recommended by the manufacturer.
3. Surfaces Which Are Highly Glazed or Have Traces of Form Oil: Treat with a preparation of acid detergent concentration and dilute muriatic acid. For this treatment, mix one part concentrated muriatic acid and 4 parts water, and then add one part of acid detergent. Remove the acid with clean water.
4. Stains from the Weathering of Corroded Metals: Remove with a solution of 2 ounces of sodium metasilicate in one gallon of water. Thoroughly wet stained areas on weathered surfaces with water before application of solution.

F. Gypsum Board

1. Before painting, allow joint treatment to dry completely. Clean surfaces of dirt and dust.

3.3 COATING APPLICATION

A. General

1. Apply coating in accordance with the paint manufacturer's recommendations.
2. All spaces shall be broom cleaned before coating is started.
3. Surfaces to be coated shall be clean, dry, smooth and protected from dampness.
4. Make edges of coating adjoining other materials and colors, sharp and clean, without overlapping.
5. Allow each coat of paint to dry at least 24 hours before succeeding coat is applied, unless manufacturer's printed directions recommend otherwise.

6. Coats, as specified under “HIGH PERFORMANCE COATING SCHEDULE”, are intended to cover surfaces perfectly. If surfaces are not adequately covered, as determined by the OWNER’S REPRESENTATIVE, apply further coats to achieve complete coverage of surfaces at no additional cost to OWNER.
 7. Finished work shall be uniform, of approved color, and free from defective brushing, spraying or rolling, and clogging or excessive flooding.
 8. Apply coatings to exposed surfaces, including areas visible when permanent or built-in fixtures, convactor covers, grilles, covers for finned-tube radiation, and similar components are in place.
 - a. Coat surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
 - b. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- B. Mixing
1. Perform in accordance with directions of manufacturer.
 2. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.
 3. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
- C. Small Cracks In Concrete and Masonry Surfaces
1. Before application of succeeding coats, fill with an approved spackling compound, small cracks, holes and other similar imperfections which show up in concrete, masonry and plaster surfaces after the primer-sealer has been applied to the surface.
- D. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.
1. Omit primer on metal surfaces that have been shop primed and touchup painted.
 2. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
 3. Where manufacturer's written instructions require sanding, sand between applications to produce a smooth, even surface.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause undercoat to lift or lose adhesion.
 5. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance. Give special attention to edges, corners, crevices, welds, exposed fasteners, and similar surfaces to ensure that they receive a dry film thickness equivalent to that of flat surfaces.

- E. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brush Application: Use brushes best suited for material applied and of appropriate size for the surface or item being coated.
 - a. Apply primers and first coats by brush unless manufacturer's written instructions permit using roller or mechanical applicators.
 - b. Brush out and work brush coats into surfaces in an even film.
 - c. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for the material and texture required.
 3. Spray Equipment: Use mechanical methods to apply coating if permitted by manufacturer's written instructions and governing regulations.
 - a. Use spray equipment with orifice size recommended by manufacturer for material and texture required.
 - b. Apply each coat to provide the equivalent hiding of brush-applied coats.
 - c. Do not double back with spray equipment building-up film thickness of two coats in one pass, unless recommended by manufacturer.
- F. Minimum Coating Thickness: Apply each material no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- G. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- H. Prime Coats: Before applying topcoats, apply a prime coat of material, as recommended by manufacturer, to material required to be coated or finished that has not been prime coated by others.
1. Recoat primed and sealed substrates if there is evidence of suction spots or unsealed areas in first coat, to ensure a topcoat with no burn-through or other defects caused by insufficient sealing.
- I. Protection
1. Protect coating materials storage space from damage. Remove contaminated rags and waste from premises every day. Take all precautions to prevent fire, including spontaneous combustion.
 2. Before start of coating, remove finish hardware, accessories, plates and similar items in place, or provide ample protection of such items as approved by the OWNER'S REPRESENTATIVE. Do not remove UL labels on doors and frames.
 3. Remove doors, if necessary, to paint top and bottom edges.
 4. Upon completion of painting, reinstall removed items.
 5. Use only workmen skilled in the applicable building trade for removal and replacement of finished items.
 6. Protect adjacent construction by suitable covering or other method during progress of the work.

7. Close off the various spaces while painting, and exclude dust until the finish is dry. Post "Wet Paint" signs as required to protect newly finished spaces.
8. At completion of this work in a space, remove spots from floors, glass and other surfaces. Leave finished space clean and in acceptable condition.
9. At completion of work in area protected by fire protection system, remove the temporary covers on the fire protection sprinkler heads.

J. Final Touch-Up

1. At completion after all adjacent work has been completed, touch up and restore finish where damaged, and leave in specified condition.

3.4 COLORS

- A. Colors shall be in accordance with color schedule furnished by the ARCHITECT-ENGINEER. No extras will be approved because of the color variety selected by the ARCHITECT-ENGINEER.
- B. Coat surfaces in areas requiring alteration work to match color and sheen of respective existing finishes.

PART 4 HIGH PERFORMANCE COATING SCHEDULE

4.1 INCLUSIONS

- A. Except for those items, surfaces and areas listed under "EXCLUSIONS", include in the work of this SECTION, the coating of all work that is customarily coated to provide a complete job, including mechanical and electrical work, whether or not each such item, surface or area is specifically shown or specified. Coat work that is not specifically shown or specified, same as similar work or, where no similarity exists, coat with a system directed by the OWNER'S REPRESENTATIVE.
- B. Coat unpainted existing surfaces exposed by alteration and removal work where such surfaces will remain exposed in coated areas.
- C. Prior to the application of coating, prepare the respective surfaces to receive paint per the requirements specified under "PREPARATION OF SURFACES".

4.2 EXCLUSIONS

- A. Unless one or more of the following items, surfaces or areas are specifically included under a specified coating system to be painted, exclude from coating under this SECTION, the following:
 1. Products having factory finish.
 2. Face brick, paving brick and quarry tile.
 3. Glazed surfaces of glazed concrete masonry and structural glazed facing tile.
 4. Concrete floors with chemical hardener finish.

5. Finished floor, wall and ceiling materials, such as resilient flooring, carpeting, vinyl fabric wall covering, and acoustical ceilings.
6. Plastic laminate-covered surfaces.
7. Copper, stainless steel, brass, bronze and chromium-plated surfaces.
8. Aluminum.
9. Glass.
10. Glazing compound and sealants.
11. Roofing and non-ferrous flashing materials.
12. Sprayed fireproofing.
13. Concealed construction, such as wall surfaces and mechanical and electrical systems within suspended ceiling spaces, wall shafts, chases and furred spaces.
14. Nameplates and UL labels on doors and frames and equipment. Be responsible for ensuring that all nameplates and UL labels are not coated.
15. Gages, thermometers and other recording devices.
16. Moving parts of mechanical equipment, such as shafts, valve stems, etc.

4.3 HIGH-PERFORMANCE COATING SCHEDULE

A. Interior Surfaces:

1. Concrete, Stucco, and Masonry (Other Than Concrete Masonry Units):
 - a. First Coat: Primer formulated for moderate environment.
 - b. Second Coat: Intermediate coat.
 - c. Topcoat: Moderate-environment, semigloss epoxy.
2. Concrete Masonry Units:
 - a. First Coat: Block filler.
 - b. Second Coat: Primer formulated for moderate environment.
 - c. Third Coat: Intermediate coat.
 - d. Topcoat: Moderate-environment, semigloss epoxy.
3. Ferrous Metal:
 - a. First Coat: Primer formulated for moderate environment.
 - b. Second Coat: Intermediate coat.
 - c. Topcoat: Moderate-environment, semigloss epoxy.

END OF SECTION

Revision History	
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